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P A P E R S

I N

M E C H A N I C K S.

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## MECHANICKS.

Mr. STEPHEN KENDRICK, of Cheines-street, Bedford-square, having presented to the Society a Gudgeon, on an improved construction, for the upright Shafts of Mills, the SILVER MEDAL was voted to him; and the Gudgeon, with its box, reserved in the Society's Repository, for the use of the Public.

### *Description of Mr. Kendrick's GUDGEON.*

THIS Gudgeon is formed of hard steel, and works on a hard steel bed; is circular, three inches diameter, and three-fourths of an inch thick: from its upper  
M side

side a rib projects, which, being fixed in the bottom of an upright shaft, the Gudgeon works horizontally on a square bed : and that now in the possession of the Society has worked in a mill whose wheel and shaft weighed nearly six tons ; and, though it had continued in work seven years, had lost very little of its surface. It ran in a square box of cast iron, having oil therein : and a notch along the whole of the face of the Gudgeon admits the oil to insinuate itself between the Gudgeon and the bed.

The

The SILVER MEDAL was this year voted to GEORGE QUAYLE, Esq. for his invention of a Pentrough, for equalizing the water falling on water-wheels; of which a Plate and Description is annexed, and a complete Model reserved in the Society's Repository.

S I R,

IN all mills worked by water, some inconvenience is found to arise from the irregularity of speed, occasioned by the variation of the head of water at the Pentrough. The specific weight being necessarily proportioned to the perpendicular altitude of the water, its velocity is increased by a greater, and diminished by a less head. No accurate judgment as to the quantity really admitted, can be formed, from the position of the shuttle. The space only is regulated by this; but the quantity of water

M 2

passing

passing through that space depends on its specific gravity, in proportion to which its course is accelerated: besides, where the race is of any considerable length, the rain-water which falls into it, and that which gains admission from the adjoining lands, baffles all calculation, as to the quantity really passing into the dam or reservoir: and the shuttles at the dam head are subject to the same evil. Any irregularity in the head of water falling on the wheel is of course communicated to the internal machinery; from whence much inconvenience must arise in all manufactories where precision in the movements is requisite; and particularly those of silk and cotton.

The giving an even, regular motion to water-wheels, appears therefore a desideratum in hydraulics. It can only, I conceive, be obtained by equalizing the quantity of water falling on the wheel; but whilst the usual system is pursued, of delivering it from the bottom of the Pen-trough, it does not appear easy to suggest  
means

means by which all irregularity can be prevented.

In order to remedy this inconvenience, and insure a constantly-regular supply of water on the wheel, it appeared to me, that means might be devised of regulating the quantity delivered, by a float, and taking the whole of the water from the surface.

After several experiments, the machine of which I have now the honour of sending you a sketch and description enclosed, and of which a model accompanies this letter, bids fair to answer the purpose.

Another advantage attends the use of this shuttle: room may be saved in the extent of the dam, as the water may be suffered to rise to a greater height, without the inconvenience attending the increased velocity of its discharge. In cases also of temporary deficiency, the water which remains, will, by this means, be worked to the greatest advantage.

M 3

I beg

I beg you will have the goodness to lay  
the model and description before the Society,  
and am respectfully,

S I R,

Your most obedient servant,

GEORGE QUAYLE.

*London,*  
*April 18, 1792.*

Mr. MORE.

*SECTION of the PENTROUGH.*

FIGURE I.

- A, The entrance of the water.  
B, The float, having a circular aperture  
in the centre; in which is suspended  
C, A cylinder, running down in the case  
E, below the bottom of the pentrough.  
This is made water tight, at the bottom of  
the pentrough, at F, by a leather collar  
placed

Fig. 1.

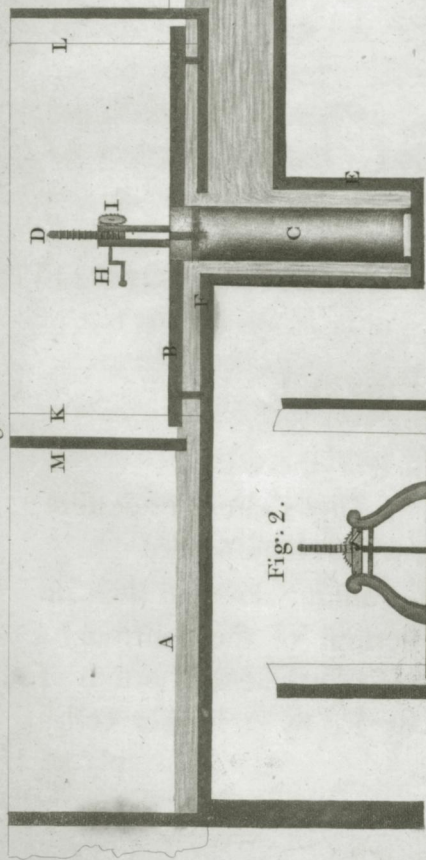


Fig. 2.

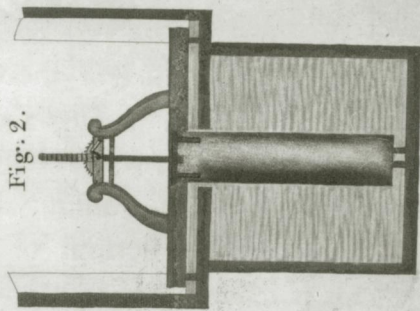
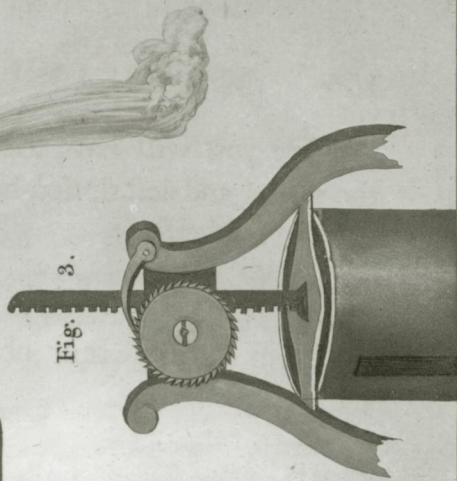


Fig. 3.



*M<sup>r</sup> Quayle's Pentrough for equalizing Water on Water Wheels.*

placed between two plates, and screwed down to the bottom.

The cylinder is secured to the float so as to follow its rise and fall; and the water is admitted into it through the opening in its sides, and there, passing through the box or case E, rises and issues at G, on the wheel. By this means, a uniform quantity of water is obtained at G; which quantity can be increased or diminished by the assistance of a small rack and pinion attached to the cylinder, which will raise or depress the cylinder above or under the water line of the float; and, by raising it up to the top, it stops the water entirely, and answers the purpose of the common shuttle. This pinion is turned by the handle H, similar to a winch-handle; and is secured from running down by a ratchet wheel, at the opposite end of the pinion axis.

K and L are two upright rods, to preserve the perpendicular rise and sinking of the float, running through the float, and

M 4                      secured

secured at the top by brackets from the sides.

M, A board let down across the pentrough, nearly to the bottom, to prevent the horizontal impulse of the water from disturbing the float.

#### FIGURE II.

A cross section, showing the mode of fixing the rack and pinion, and their supports, on the float. The rack is inserted into a piece of metal running across the cylinder, near the top.

That the water may pass more freely, when nearly exhausted, the bottom of the cylinder is not a plane, but is cut away so as to leave two feet, as at C, Fig. I.

The float is also kept from lying on the pentrough bottom, by four small feet; so that the water gets under it regularly from the first.

FIGURE

FIGURE III.

An enlarged view of the cylinder, shewing the rack and ratchet wheel, with the click, and one of the openings on the side of the cylinder: the winch, or handle, being on the opposite side, and the pinion, by which the rack is raised, inclosed in a box between them.

The scale of the model is one inch to a foot.

The annexed figures are reduced to one sixth.

It

It being considered that, in the erection of large works, a method of laying the weight, suspended by a crane, in any situation, within the space of a semi-circle, whose radius is nearly equal to the length of the gib, will prove of considerable use, particularly in large buildings, as piers, &c. a Bounty of TWENTY GUINEAS was voted to Mr. RICHARD JOHNSON, for his invention of a Crane to answer that purpose (see the plate annexed), a complete model of which is reserved in the Society's Repository.

S I R,

**I** HAVE invented an engine for heavy work, such as piers and staiths: it is a Compound Crane, moves in a semi-circle, will take up a stone, and carry it to any part of the building, that lies within the  
range

range of the gib, and will bring a stone within three feet of the centre of the crane: it was originally designed for the use of a pier building here: the work going on so very slow, gave rise to the thought. I have the model by me, half an inch to a foot, which I can send for your inspection: several gentlemen who have seen it, say it is original.

I hope you will excuse the freedom hereof; but the recommendation of some friends here, induced me to apply to you; and if you will give me leave to send the model to you, its action may be better understood by inspection than by description. I flatter myself it will merit the approbation of the Society, and may be of public utility.

I am, SIR,

Your obliged humble servant,

RICHARD JOHNSON.

*Scarborough.*

Mr. MORE.

SIR,

S I R,

**B**Y the Active Packet, Captain Chambers, who sailed for London this day, you will receive Mr. Richard Johnson's model of a Compound Crane, which, when properly made, he supposes, would have very much expedited the building of the new pier at this place. That pier is principally constructed with stones, from ten to thirty tons weight; and by their present manner of raising and placing them, the work advances very slowly.

I am, S I R,

Your most humble servant,

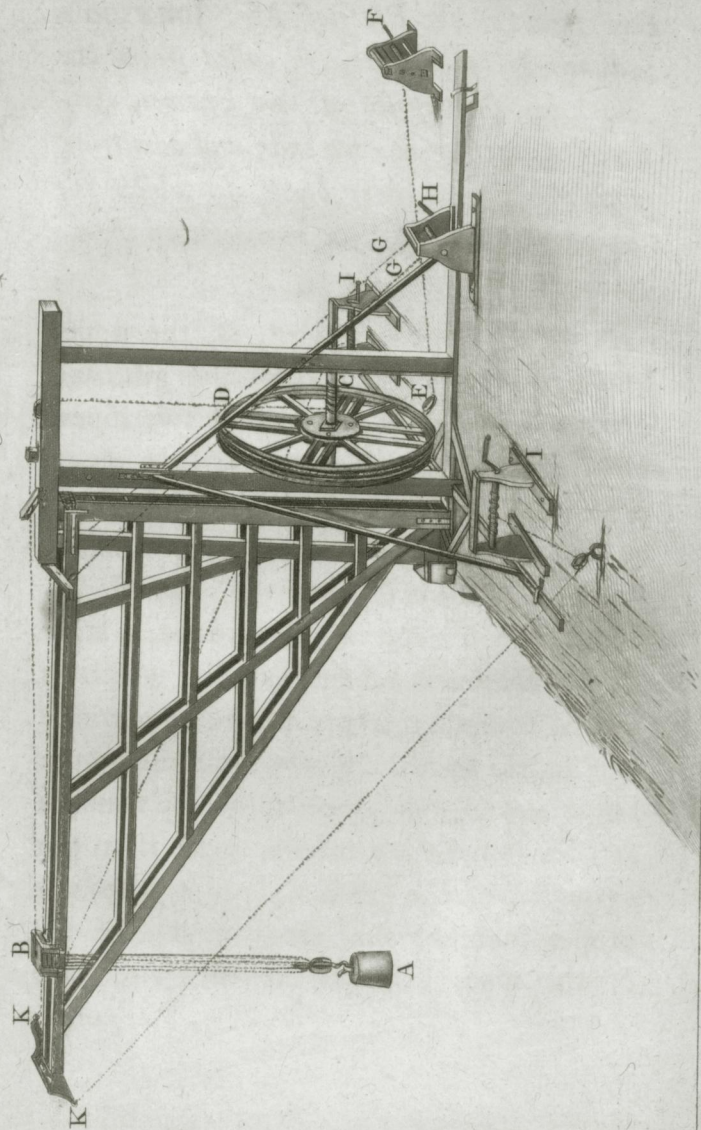
JOHN TRAVIS.

*Scarborough.*

Mr. MORE.

*Description*

*Mr. Johnson's double gibbed Crane.*



*Description of the Plate of Mr. JOHNSON'S double-gibbed Crane, so called from the Gib being composed of two Frames, connected together at each end; and admitting the ropes and lower block, by which the weight is suspended, to run between them.*

A, the weight suspended. B, the upper block moving on the top of the gib, and drawn backward or forward by two ropes. GG, winding in different directions on an arbor at H. The weight and lower block are raised or lowered by a rope, winding on or off the axis C; and the power is increased by a rope winding round a large wheel D, fixed on the axis C, which is wound round an arbor, turned by a winch at F. To turn the gib to the right or the left, there are two arbors turned by winches at I I: round these arbors, ropes from the extremity of the gib K K, passing through proper snatchblocks, are wound; the one of the ropes being slackened, while the  
other

other is drawn in according to the movement intended; and thus the horizontal motion of the whole gib is obtained, and the weight A may be deposited on any spot required, within the range of the gib. Two friction wheels are placed on each side the upper block, which not only serve to clip the top of the gib, and thus prevent the block, by any accident, slipping off, but facilitate its motion along the upper part of the gib.

Captain

CAPTAIN EDWARD PAKENHAM, to whom the Public is already so much obliged for his attention to the safety of ships, particularly when either their rudders or masts are injured (see the papers on those subjects in the VIIth and Xth Volumes of these Transactions), has this year again favoured the Society with a model, shewing an easy, safe, and certain method of preventing a ship's rudder being totally lost, should the pintles and braces, on which it moves, be entirely broken: and in a subsequent letter, having also communicated, in addition to the mode contrived by him, for preventing the total loss of a rudder, a mode of preventing a rudder beating about, in case the tiller is broken; Thanks were given to CAPTAIN PAKENHAM for these communications. And the following letters, and the annexed plate, will fully shew the method prescribed by

by him for those useful and necessary purposes. The models above alluded to are reserved in the Society's Repository, for the use of the Public.

S I R,

**M**Y former attempts to supply the loss of a ship's rudder, having been so fortunate as to meet the Society's approbation, I have now the pleasure to present them with a model, and a description of a plan, to prevent the total loss of the rudder; and as it has met the approbation of many of our first practical seamen, I flatter myself, it will be found to answer the end proposed, as it is fitted without any inconveniency, trouble, or expence; and calculated to benefit all ships that have two rudder heads, or two holes for the tiller, which is the case with all men of war and Indiamen.

As it is from misfortune chiefly that experimental knowledge is gained at sea,  
when

when combating with contending elements, and each hour aggravating former calamity; the mariner, thus furnished with one great resource, may find his ideas strengthened by exigency, and surmount, with ease, other surrounding dangers. But the frequent disasters which have hitherto happened, point out the necessity of some certain plan, to prevent this misfortune: for it is a just and true remark, Sir, that few ships beat off their rudder, by striking on the ground, without losing them altogether; such was the case with the Royal George, and Namur, in Torbay; the Warrior, Repulse, Torbay, Porcupine, and the Endymion, in the West Indies; and the Guardian, off the Cape: these are home to the recollection of present memory, besides various other instances in the mercantile line.

I have observed that foreign vessels in general endeavour to guard against losing the rudder altogether, but their attempts hitherto have been ineffectual: their plan

N is

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is to have a strap of rope from the main-piece of the rudder to a hole in the stern-post, at the water's edge; but this expedient has always proved of small avail; for, without doubt, the violence which can so shatter and destroy the iron work, will unavoidably carry away the strap: not to bring forward any idea of its being chafed and rotten in long voyages. The *Ville de Paris*, and all the prizes captured on the 12th of April, had this rope strapped.

My plan, you will observe, Sir, is calculated to save the rudder, when it is beat off, and serves likewise to keep it in its proper place; for it is remarked, that no iron work (that is, the pintles and gudgeons) can withstand the violence of the ship's striking the ground: therefore, when the iron work is carried away, it follows that the fid will still support the rudder, by resting on the comings, and act as an upper gudgeon; nor indeed can any thing force it away, unless the rudder is beat all to pieces, which is very seldom the case;  
but,

but, should that happen, the mariner will have a resource in my former substitute. I would recommend additional rudder-pendants, when the rudder is beat off, which is easily done, by clinching hawfers round the rudder, on each side the ship, and slipped well down the rudder, to keep the lower part as quiet as possible; but this, and many other precautions, I have no occasion to point out, as they will occur to the mariner himself, after he has been so fortunate as to save his rudder.

Having therefore perfectly convinced myself, that it is calculated to answer the end proposed, permit me to observe, Sir, that this reason has been a powerful inducement with me, in introducing it to the notice of the Society; forming an early wish, that its ease and simplicity of construction may become as diffusive as possible.

In the Society's making public use of the plan, my original intention will be

amply answered ; my pride as an officer,  
and my feeling as a member of the com-  
munity receiving equal gratification. I  
have the honour to be, with respect,

S I R,

Your most obedient

And humble servant,

EDWARD PAKENHAM.

*Crown Street,  
Nov. 12, 1792.*

Mr. MORE.

S I R,

IN addition to the description I have  
given of a method to prevent the  
total loss of a ship's rudder, I beg leave  
to communicate some ideas which have  
since occurred to me, for keeping a rudder  
quiet, if the tiller should be carried away  
in a gale of wind, and which, I am taught  
to believe, is of sufficient importance to  
claim peculiar attention.

It

It has hitherto been the custom, in a gale of wind, when a tiller is broken, to endeavour to steady the rudder, and prevent the violence of the sea from doing it prejudice, by letting down chocks or wedges; but this method must necessarily be liable to endanger it, by straining the pintles and gudgeons; consequently, to the great distress of many ships deeply laden, has never been found to answer the desired purpose.

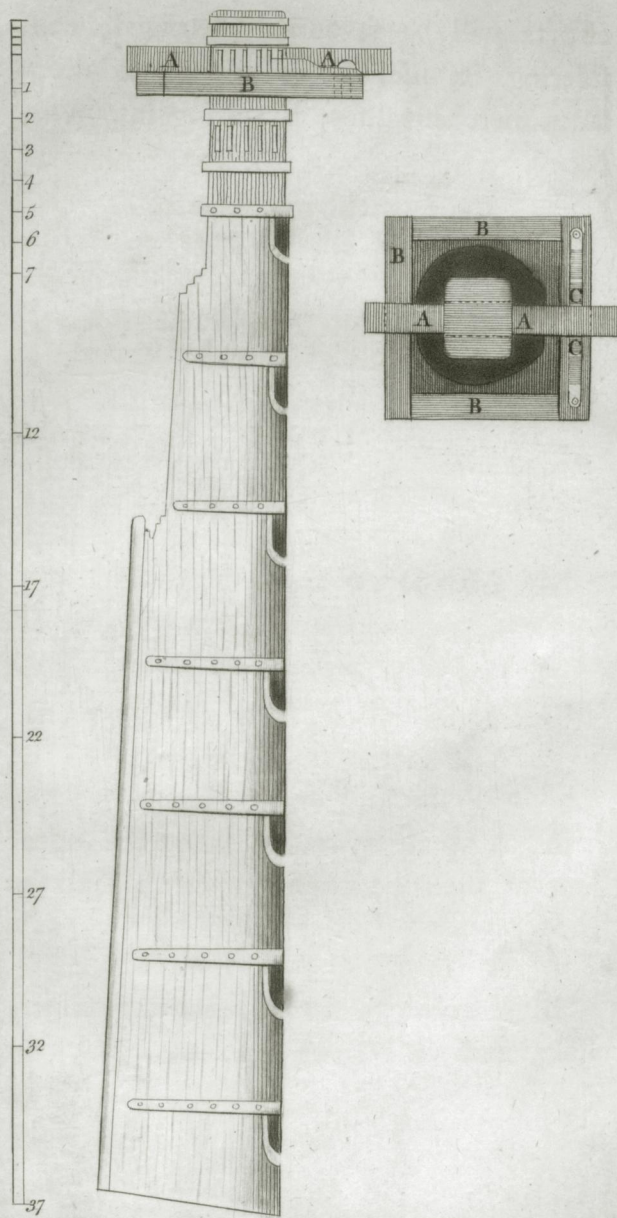
The model that accompanied my former plan has a coming pertaining to it, for admitting a fid, which goes through the spare tiller-hole to rest upon, and which, I presume, will be sufficient to sustain the rudder, when unshipped: but as it has been found, upon any unforeseen occurrence at sea, which threatens immediate danger, that the human mind, although able to brave and surmount every danger and difficulty, has not always been capable to adopt the most speedy and cer-

tain remedy, I trust this further improvement will be found simple, easy, and effectual.

I propose, that the coming, which incloses the head of the rudder, shall have holes, bored at convenient distances, to receive bolts or palls, of between two and four inches in diameter, and about fifteen inches in length, according to the size of the ship: these bolts being placed on each side of the fid, when occasion requires, will confine the helm in any position, and not only give an opportunity to shift a tiller, but will likewise, if necessary, take off any strain from it when lying-to.

The earnest desire I entertain of being useful to the community, leads me to submit these thoughts to the Society; and as they have constantly shewn particular attention to whatever tends to public utility, I am induced to believe, that my  
efforts

*A plan by Capt. "Edw. Pakenham, to prevent  
a Ship's Rudder being lost.*



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efforts will be favourably received, considering its use, when applied to deep-laden merchant ships, labouring in a heavy sea.

I am, with great respect,

S I R,

Your most obliged humble servant,

EDWARD PAKENHAM.

*Crown Street,  
Jan. 15, 1793.*

Mr. MORE:

*Explanation of the Plate of* CAPTAIN  
PAKENHAM'S RUDDER.

A. A square fid made to fit the upper hole of the rudder, and bolted through the rudder head.

B. A coming, fitted round the rudder-hole, and well secured to the deck, for

N 4 the

the fid to work on, and acting as an upper gudgeon, in case the pintles are beaten off.

C. Palls bolted through the fore-part of the coming, to quiet the rudder, in the room of chocks, in case the tiller should be carried away.

The

The Society having this year received from Mr. JOHN BELL, Serjeant in the Royal Regiment of Artillery, a Gun and Harpoon on a new construction, for taking Whales, satisfactory trials were made therewith, and a Bounty of TWENTY GUINEAS voted to him for his improvements, which are shewn in the annexed Plate; and a model, as mentioned in the following Paper, reserved in the Society's Repository.

S I R,

HAVING resumed the business of the Harpoon-gun, on which I have made several experiments, I have the pleasure to acquaint you, that the result answers my fullest expectations.

I have taken the liberty of sending it, with the carriage, to the Repository of the  
Society,

Society, and beg the favour, when convenient, you will please to mention it to the Members. I will attend their pleasure, at any future period, in order to explain the manner of its application.

I am, SIR,

Your much obliged

And obedient humble servant.

JOHN BELL.

*Woolwich,*  
*Jan. 13, 1793.*

*Observations on throwing a Gun-Harpoon.*

First, in order to strike an object, at the distance of about sixty feet, requires no less an angle than five degrees elevation; from which the gun's position then is such as wholly to obstruct the person using her, from pointing out any true line of direction: likewise the proper elevation can be no other than a supposition.

To

To remedy this, a tangent dispart is permanently fixed at the muzzle of the gun. The vertical lines show the line of direction; and the horizontal lines, the required elevation: which is explained in the following manner, viz. The front horizontal line, and the under part of the rear cut, and the base ring of the gun, are parallels; so that an object seen upon the same level with the metal, would be struck with the harpoon at about thirty feet distance: then the coin being drawn back, until the under horizontal line of the rear cut intersects the front line and the object, it would then be struck at the distance of about sixty feet; and when the upper line of the rear cut intersects the front line and the object, it would be struck at the distance of about ninety feet: so that any intermediate distance between those mentioned, must depend on the person's judgment in using the gun. For instance, suppose the distance to be from 70 to 80 feet; then bring the front line and a middle space between the two rear lines and the object in view.

The

The same rule must be observed for any distance under sixty feet.

Secondly, Appropriating two locks insures a more certain fire; and should both locks take, the powder must be more equally inflamed.

Thirdly, Coiling the line in the front locker prevents it from getting entangled: likewise, in traversing the gun to the right or left, as occasion may require, the line is moved with it; which also prevents the harpoon, in its flight, from being influenced by the weight of the line out of its proper direction; which must otherwise be the case, where the line lays upon one side of the metal. From this it may not be improper to observe, that, in nearing the intended object, attention should always be paid, to endeavour, as much as possible, to be so situated, that the wind blows either a-head or stern of the boat at the time of firing; for a strong wind will sensibly alter the harpoon's line of direction, from the  
power

power it has upon the line, as its length increases from off the locker. The two small pins at the front of the locker are to keep the coil in (on a rough sea), which are to be thrown out before firing: but should this be neglected, no other damage will ensue, than bending the pins a little, by the friction of the ropes running out.

Fourthly, From experiment, it is found, that the gun, when loaded with twelve drams of powder, and a harpoon weighing between five and six pounds, is fired, the re-action upon the metal is considerably more violent than when loaded with a service charge of powder and shot. In order to prevent any accidents which might happen, by the iron pin of the carriage giving way, from so sudden a shock, a breechen is made fast, from the sliding carriage, to the head of the boat, and properly secured: the gun being fired, the elasticity of the breechen permits her to recoil about two inches, which certainly is a much less strain to the boat, and a safer method of  
using

using the gun ; for, allowing the breechen to break, there is then the same principle of the iron pin to be depended upon, as at present.

Fifthly, The wooden tube which encircles the shank of the harpoon, is driven off from the muzzle of the gun, on the first impulse ; so that the line can receive no injury from the fire ; and the harpoon meets with but a small check, from the collar and shackle, and of course must preserve in its flight a more uniform line of direction, and angle of elevation.

Sixthly, Attention should be paid to keep the powder in good order. If a doubt should arise of that nature, place a small portion of it on the hand ; and if, in shaking it off again, a quantity of dust remains on the skin, it indicates the powder having imbibed moisture. To remedy this, take a clean glazed earthen pan, and warm it upon a fire, so that the hand can bear to touch it ; then wipe it, and remove it to a  
proper

*Mr. Bell's improved Gun and Harpoon.*

Fig. 2.

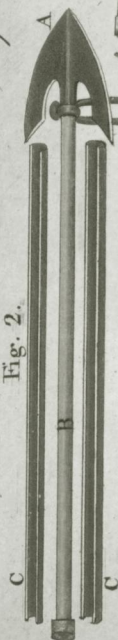
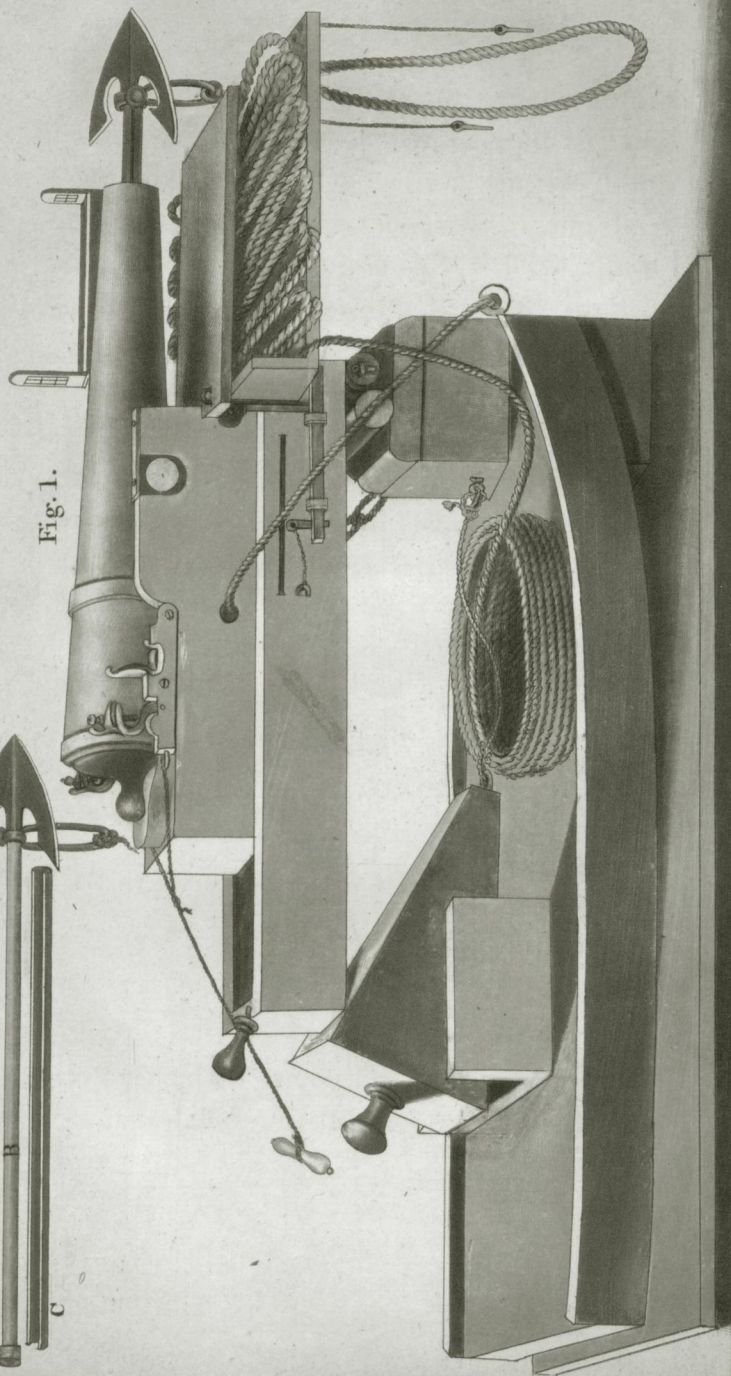


Fig. 1.



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proper place, throwing a few ounces of powder into it; which will in a few minutes become dry; consequently, will act more quick and violent.

JOHN BELL,  
Serjeant of the Royal Regiment of  
Artillery.

N. B. A model of the Gun and Harpoon complete is reserved in the Society's Repository, made to a scale of six inches to a foot.

*Description of the Plate of Mr. BELL's im-  
proved GUN and HARPOON.*

FIGURE I.

The Gun fitted for firing.

FIGURE II.

The form of the Harpoon. The head of this harpoon, A, is of the usual shape;  
from

from whence runs a shank B, terminating, at the other end, in the form of a cylinder shot. A piece of ash, or other wood, *cc*, is turned, of a due size, and length of the bore, to fill the calibre of the gun when the charge is in ; and, being sawed in half, lengthways, a hollow is ploughed in each piece, to clip the shank of the harpoon : thus the whole bore of the gun is filled ; and, on the discharge, the ring to which the rope or fore-ganger is affixed, strikes against the cylinder shot, with its force so much abated as to prevent any danger of breaking the ring.

The

The SILVER MEDAL was voted to Mr. THOMAS COLLEY, of Gregynog, near Newtown, Montgomeryshire, for his contrivance for locking Carts in descending steep hills; some account of which is contained in the following letter, and the model mentioned therein reserved in the Society's collection for the use of the public; and, in order to make it more clear, a cut of the Locking Pole is given.

S I R,

WHEN I had the pleasure of an interview with you last, I mentioned having invented a lock for two-wheeled carts, which has been found extremely useful in this mountainous neighbourhood, as well as in particular situations in the adjoining county, Salop, where I have recommended the use of it.

O

Having

Having been witness to some distressing misfortunes, occasioned by the usual modes of preventing a loaded cart overpowering the shaft-horse, in descending hills, I was induced to attempt a removal of the inconvenience; in which experience proves I have been successful: for, after seven years use of these locking-poles, I have not heard of any accident having happened in that respect: and though some of our roads have elevation of ten degrees, it is found that carts descend them with as much ease and safety as waggons having both the hinder wheels locked, with only one exception; and that is, where the ruts are deep and stoney (which is seldom the case in such situations), a little more care is required of the carter, lest the point of the locking-pole should meet with a sudden resistance, and by that means overturn the cart.

Learning from you, Sir, that the Society for the Encouragement of Arts, Manufactures, and Commerce, are ever ready to receive intimations of real improvements,  
however

however small they may be ; and being desirous that this simple and cheap invention may be made more generally useful ; I have sent, by the Salop waggon, directed to you, a case containing something like a cart, in miniature, with a locking-pole fixed to the wheel, as when in use : by placing which on an inclined plane, you will better understand how it operates, than by any drawing I could make,

You will please to observe, that, in order to have the locking-pole secure from breaking, it should be made of ash, which grew very near its form, particularly at the lower crook, and ironed as the model. The butt or stem of an ash-tree, having the spurns\* left to it in felling, I find, makes the best ; and several may be sawed out of the same tree, if of a moderate size, and the spurns grew suitably.

In the use of the locking-pole, one thing must be observed, which may not occur on first trial, i. e. If a horse is put into the

O 2 shafts,

\* The beginning of the roots,

shafts, that has been used to that situation, and to descents, he will, as usual, be so much inclined to hold back, that it will be found difficult to make him draw, which it is quite necessary he should do; otherwise, the chain-horse, which should always be linked to the locked side, will have too much to draw, and being so much below the point of the shafts, it will occasion unnecessary weight to that horse.

In order to convey the locking-pole from one steep to another, it is placed between the under-side of the cart and the axle-tree, and the smaller end buckled with a strap, which you will observe under the cart, on the driving side.

The scale sent with the model is that by which it was made: though the London carts are much larger than those used here; and the nine inch wheels occasion much more friction, when locked, than our six inch: yet I trust a locking pole, made of proportionable dimensions to the model, of

a proper piece of timber, and strengthened with iron, will be adequate to the weight of a load on any descent.

I have now, Sir, only to say, that I hope you will, from the model and this description, perfectly understand, and on trial be fully satisfied of, the use of this invention: and if the Society shall deem it worthy a place in their Repository, I shall be highly gratified; and am, with respect,

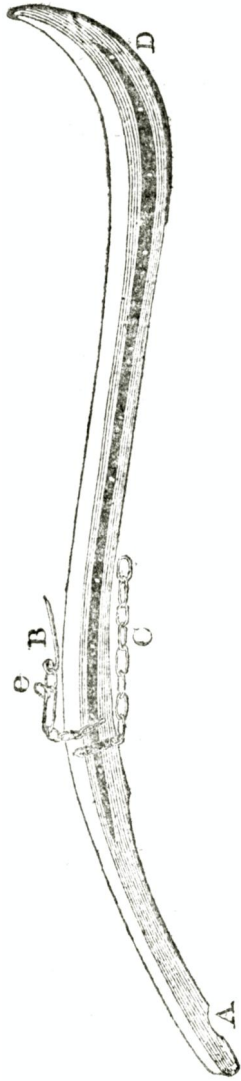
S I R,

Your obliged humble servant,

T H O M A S C O L L E Y.

*Gregynog, near Newtown, Montgomeryshire,  
October 31, 1792.*

Mr. MORE.



*Explanation of the Cut of Mr. Colley's Locking-Pole.*

A, The hollow, which lies on the nave of the wheel.

B, C, The chains which clip the felly of the wheel.

D, The front part of the pole, shod with iron.

To strengthen the pole, a rib of iron is also rivetted along the side of it, as expressed by the black line.

When the chain C is put round the felly of the wheel, the pin at B being passed through the outermost link of C, and turned back through the moveable ring, e, the wheel is thus held fast.

A Bounty of FIFTEEN GUINEAS was given to Mr. DIXON, for his contrivance of a Preservative Wheel, to be fixed to a Walking-Wheel Crane; whereby the safety of the men is insured, should the weight at any time overcome the power, as is too frequently known to be the case—see the Plate. A Model is also reserved in the Society's Repository.

MY LORDS AND GENTLEMEN,

IT is well known that numbers of unfortunate men have lost their lives by working on the quays, in the Wheel Cranes, by their recanting back, when overpowered by the weight craning up; and having no means whereby to save themselves, have inevitably fallen a sacrifice: it has long been my constant study to contrive some method to prevent those fatal misfortunes; which I have length accomplished, in what

I call the Preservative Wheel; and I am now happy in offering it to your inspection, and hope it will meet your approbation. The preservative wheels are fixed to the axis of the wheel; over which pass two ropes, suspending a bar of wood, for the men to lay hold of, when overpowered, and by which they may suspend themselves with the greatest safety, till all danger is past. Pulleys are placed near the periphery of each of the preservative wheels; over which the ropes run, and are thereby prevented taking fire by the friction. The preservative wheels are made in two parts, in order that they may be fixed to any crane already erected. I am,

My Lords and Gentlemen,

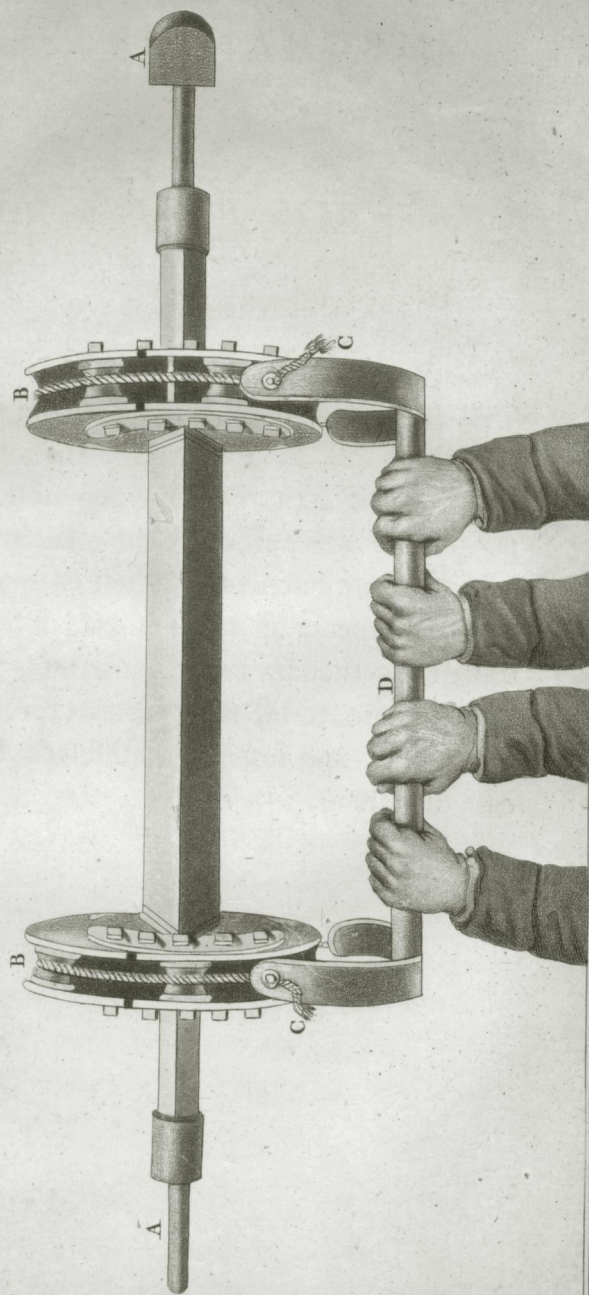
Your most obedient humble servant,

JOSEPH DIXON.

*No. 1, Moore's Yard,  
Old Fish-street.*

To the Society for Encouragement of Arts, Manufactures,  
and Commerce.

*Mr Dixon's contrivance for preventing accidents in Wheel Cranes.*



*Explanation of the Plate of Mr. DIXON'S  
CONTRIVANCE, for preventing Accidents  
in WHEEL CRANES.*

A. A. The axis or spindle of the walking wheel. B. B. Two preservative wheels fixed on the axis, and having near their peripheries six pullies, over which ropes run, that are fastened, at their extremities, to two segments of circles C. C. These are united together by a wooden bar D, which the men are to lay hold of, as expressed in the figure, and suspend themselves by, in case of danger.